KHALIL UR RAHMAN, PhD

Curriculum Vitae

Hydro-climatology · Hydrological Modeling · Remote Sensing · Climate Change Impacts



Associate Professor of Hydraulic Engineering
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50	252.9	28	1,887	1.72M RMB	22
SCI journal articles	cumulative IF	h-index	citations	grant funding (6)	graduate students

Citation metrics: Google Scholar, 9 October 2026. Impact factors are journal IFs at time of listing.

ACADEMIC SUMMARY

Associate Professor of Hydraulic Engineering at Shandong University and hydro-climatologist with more than 10 years of experience in climate change impact assessment, hydrological modeling (SWAT, HEC-HMS, MODFLOW, RegCM5, WRF and WRF Hydro) and remote sensing of water resources across the Third Pole and the Indus Basin. Author of 49 SCI-indexed journal articles (cumulative impact factor 252.9; h-index 28; 1,864 citations) in journals including Journal of Hydrology, Agricultural Water Management, Atmospheric Research and Climate Dynamics, and investigator on 6 competitive grants totalling 1.72 million RMB (256628 USD) from NSFC, the China Postdoctoral Science Foundation and HEC Pakistan. Mentor to 21 graduate researchers across four universities in China, Pakistan and Saudi Arabia, and Topic Editor, Guest Editor and Editorial Board Member for international water and environment journals.

RESEARCH INTERESTS

- Regional Climate Modeling (WRF and RegCM5) and climate change impact assessment on the water–food–ecosystem nexus.
- Glacio-hydrology and cryosphere–hydrology interactions across the Third Pole.
- Satellite precipitation merging and machine learning for hydrometeorology.
- Groundwater assessment with GRACE / GRACE-FO and smart monitoring systems.
- Drought characterization and drought indices under changing climate and land use.
- Remote sensing, GIS and smart technologies for water resources management.

ACADEMIC APPOINTMENTS AND PROFESSIONAL EXPERIENCE

Associate Professor Feb 2024 – Present

Department of Hydraulic Engineering, School of Civil Engineering, Shandong University, Jinan, China

- Lead a research group of five graduate students (3 PhD and 2 MS) working on Third Pole hydro-climatology, GRACE-based groundwater assessment and climate change impacts on the water–food–ecosystem nexus.
- Developing a Third Pole–Weather Research and Forecasting (TP-WRF) regional climate modeling framework that links aerosol concentrations, debris-covered glacier dynamics and cryosphere–hydrology processes to project runoff regimes under future climate scenarios.
- Designed and teach the postgraduate course “Remote Sensing for Water Resources” (covering satellite and reanalysis datasets, Google Earth Engine, and Python applications) for MSc and PhD researchers.
- Published 9 journal articles as first or corresponding author during 2024–2026, including Journal of Environmental Management (IF 8.4), Journal of Hydrology and Agricultural Water Management.
- Co-PI on an NSFC project (540,000 RMB, 2023–2026) on remote-sensing retrieval of topsoil water and salt regimes in arid irrigation districts.

Shuimu Scholar (Postdoctoral Fellow) Nov 2021 – Nov 2023

Department of Hydraulic Engineering, Tsinghua University, Beijing, China

- Selected as a Shuimu Scholar, Tsinghua University's most competitive postdoctoral fellowship, awarded to 50 outstanding young scientists.
- Won two competitive PI grants totalling 280,000 RMB from the National Natural Science Foundation of China (200,000 RMB) and the China Postdoctoral Science Foundation (80,000 RMB); both completed in 2023.
- Calibrated and validated a smart IoT-based groundwater monitoring system integrated with GRACE satellite data for real-time assessment of regional groundwater storage depletion; presented as oral talks at the XIV IAEG Congress (2023), the China Water Academic Congress (2023) and ICSWE (2024).
- Developed PCA-optimized Vegetation Health Indices for drought monitoring under severe climate and land-use change.

Doctoral Researcher and Teaching Assistant 2017 – Jan 2021

Department of Hydraulic Engineering, Tsinghua University, Beijing, China

- Developed merged multi-satellite precipitation datasets for Pakistan's complex topography using dynamic Bayesian model averaging, dynamic clustered BMA and weighted-average least-squares algorithms, and evaluated them for SWAT streamflow simulation and drought monitoring.
- Published 10 peer-reviewed articles from the thesis (Journal of Hydrology, Atmospheric Research, Journal of Hydrometeorology, and Remote Sensing) and an Elsevier book chapter.
- Teaching Assistant for the graduate courses "Theory and Application of Fluid Dynamics in Porous Media" and "River Engineering" (2017–2018).

Graduate Researcher and Teaching Assistant 2015 – Feb 2017

Department of Hydrology and Water Resources Management, King Abdulaziz University, Jeddah, Saudi Arabia

- Simulated the impact of rainwater harvesting on groundwater recharge in Wadi Al-Lith using HEC-HMS, GIS and remote sensing; results published in Applied Energy, Modeling Earth Systems and Environment and Geocarto International.
- Teaching Assistant for Advanced Groundwater Hydrology, Groundwater Modeling and Special Topics in Hydrology (graduate).

Irrigation Engineer Dec 2013 – Dec 2014

Royal Abyari, Peshawar, Pakistan

- Practised field irrigation engineering in Khyber Pakhtunkhwa; this experience underpins later research on irrigation-water allocation, water pricing and groundwater use in canal command areas.

EDUCATION

PhD in Hydraulic Engineering Jan 2021

Tsinghua University, Beijing, China

Dissertation	*Developing merged satellite precipitation datasets (MPDs) and their application in hydrological modeling over complex topography of Pakistan*
Supervisor	Prof. Songhao Shang
Focus	Statistical and machine learning merging of satellite precipitation; hydrological modeling and drought assessment with MPDs
Output	10 peer-reviewed articles (Journal of Hydrology, Atmospheric Research, Remote Sensing, Journal of Hydrometeorology)

MS in Hydrology and Water Resources Management Feb 2017

King Abdulaziz University, Jeddah, Saudi Arabia

Thesis	*Simulation of rainwater harvesting (RWH) impact on groundwater recharge in Wadi Al-Lith, Kingdom of Saudi Arabia*
Supervisor	Dr. Khaled Saeed Balkhair
Focus	Remote sensing and GIS, hydrological modeling, hydrogeology
Output	3 peer-reviewed articles (Applied Energy, Modeling Earth Systems and Environment, Geocarto International)

BS in Civil Engineering Nov 2013
University of Engineering and Technology Peshawar, Pakistan
Thesis *Investigation of low-head hydropower potential of the Upper Swat Canal*
Supervisor Prof. Zia Ul Haq

RESEARCH GRANTS

6 competitive grants totalling **1,724,700 RMB** (≈1.72 million RMB): Principal Investigator on 2 (280,000 RMB), Co-Principal Investigator on 4.

#	Project title	Funding agency	Role	Amount (RMB)	Period / status
1	Real-time assessment of regional groundwater storage depletion with a smart groundwater monitoring system and GRACE data	National Natural Science Foundation of China (NSFC)	**PI**	200,000	2023 *Completed*
2	Development and evaluation of a robust VHI by optimizing the weights of VCI and TCI under severe climate and land-use changes	China Postdoctoral Science Foundation	**PI**	80,000	2023 *Completed*
3	Remote-sensing retrieval and analysis of the response of topsoil water and salt regimes from spring to autumn/winter irrigation of the previous year in an arid irrigation district	National Natural Science Foundation of China (NSFC)	Co-PI	540,000	2023–2026 *In progress*
4	Economic and environmental implications of water harvesting practices under changing climate and land-use scenarios across Pakistan	Higher Education Commission (HEC), Pakistan	Co-PI	636,000	2022–2024 *Completed*
5	Numerical modeling of landslide dam breach: case studies from China and Pakistan	State Key Laboratory of Water Resources and Hydropower Engineering Science, Wuhan University	Co-PI	80,000	2021 *Completed*
	Total (5 grants)			**1,536,000**	

HONORS, FELLOWSHIPS AND SCHOLARSHIPS

2021 Shuimu Scholar, Tsinghua University, postdoctoral fellowship awarded to 50 outstanding young scientists

2017 Chinese Government Scholarship for PhD research, Tsinghua University

2015 Ministry of Education (KSA) Scholarship and Deanship of Graduate Studies Scholarship, King Abdulaziz University

2009–2013 Semester merit awards in all eight semesters, UET Peshawar (first position in five semesters)

PUBLICATIONS

50 peer-reviewed SCI journal articles (2017–2026), cumulative impact factor 252.9; Google Scholar: 1,887 citations, h-index 28, i10-index 41 (9 Oct 2026).

Rahman, K.U. *= author; * = corresponding author; ** = graduate student supervised by K.U. Rahman*

A. Peer-Reviewed Journal Articles

2026

[50] Meng, J., Zhai, K., Liu, S., Ma, X., Zhao, R., **Rahman, K.U.**, Mao, D. (2026). Time-domain induced polarization data acquisition at contaminated sites. *Geophysics*, 105115. **(IF 3.5)**

[49] **Rahman, K.U.**, Abbas, S., Mao, D., Shang, S., Pham, Q.B., Khan, A.H. and Hussain, A. (2026). Unmasking human-subsidized resilience through hydrological drivers of water use efficiency during compound droughts across the North China Plain. *Journal of Hydrology: Regional Studies*, 65, 103394. **(IF 5.0)**

[48] Khan, A.H.**, **Rahman, K.U.***, Ejaz, N., Ali, M.Z., Jadoon, K.Z., Mao, D. and Shang, S. (2026). Understanding groundwater dynamics of the depleted aquifer in the Indus Basin based on downscaled GRACE data and groundwater modelling. *Journal of Hydrology: Regional Studies*, 64, 103278. **(IF 5.0)**

[47] **Rahman, K.U.**, Abbas, S., Khan, A.H., Shang, S., Hussain, A. and Mao, D. (2026). Comprehending the impact of hydro-meteorological droughts on ecosystem vulnerability and resilience across the Indus River Basin in Pakistan. *Journal of Environmental Management*, 402, 129077. **(IF 8.4)**

[46] Murtaza, A.**, Saleem, M.W., Gabriel, H.F., **Rahman, K.U.***, Iqbal, Z. and Mao, D. (2026). Optimized identification of glacial lake outburst flood hazard using multi-criteria decision analysis. *Hydrological Sciences Journal*. **(IF 2.5)**

2025

[45] Khan, A.H., Ejaz, N., Shang, S., **Rahman, K.U.** and Tariq, A. (2025). Remote sensing-based cropping pattern identification and its impact on groundwater use in canal command areas of an irrigated agriculture region in Pakistan. *Agricultural Water Management*, 322, 110017. **(IF 6.5)**

[44] **Rahman, K.U.**, Mao, D., Ejaz, N., Saleem, M.W., Balkhair, K.S., Khan, K.U.J. and Shang, S. (2025). Developing robust Vegetation Health Indices by optimizing the weights for vegetation and temperature condition indices using principal component analysis. *Journal of Hydrology: Regional Studies*, 61, 102741. **(IF 5.0)**

[43] **Rahman, K.U.**, Mao, D., Ejaz, N., Pham, Q.B., Hussain, A., Mohajane, M., Ali, M. and Shang, S. (2025). Environmental impacts of the Billion Tree Tsunami Project in Khyber Pakhtunkhwa on the dynamics of agro-meteorological droughts. *Journal of Hydrology*. **(IF 5.9)**

[42] Hassan, M., Ejaz, Z., Abbas, S., Mahmood, R., Chishtie, F.A., Shi, X., Ahmad, B., **Rahman, K.U.** and Naqvi, S.A.A. (2025). Projected climate regime over Pakistan and its implications for hydrology in the Hunza River Basin using CMIP6 GCMs. *Climate Dynamics*, 63(7), 285. **(IF 3.7)**

[41] Meng, J., Ma, X., Chao, C., Hu, L., Jougnot, D., Liu, S., **Rahman, K.U.** and Mao, D. (2025). On the reliability of time domain induced polarization for contaminated sites: partial integral vs full decay. *Engineering Geology*, 108125. **(IF 8.4)**

[40] Ma, X., Zhang, J., Chao, C., Liu, S., **Rahman, K.U.**, Li, S., Guo, L. and Mao, D. (2025). Tracking Cr(VI) removal with spectral induced polarization under ZVI and AC synergetic remediation. *Environmental Research*, 267, 120707. **(IF 7.7)**

2024

[39] **Rahman, K.U.**, Ejaz, N., Shang, S., Balkhair, K.S., Alghamdi, K.M., Zaman, K., Khan, M.A. and Hussain, A. (2024). A robust integrated agricultural drought index under climate and land use variations at the local scale in Pakistan. *Agricultural Water Management*, 295, 108748. **(IF 5.9)**

[38] Ejaz, N.**, Khan, A.H., Saleem, M.W., Elfeki, A.M., **Rahman, K.U.**, Hussain, S., Ullah, S. and Shang, S. (2024). Multi-criteria decision-making techniques for groundwater potentiality mapping in arid regions: a case study of Wadi Yiba, Kingdom of Saudi Arabia. *Groundwater for Sustainable Development*, 101223. **(IF 4.9)**

[37] Shah, S.A.**, Gabriel, H.F., Saleem, M.W., Ejaz, N., Shang, S., Mao, D. and **Rahman, K.U.*** (2024). Analyzing the role of changing climate on the variability of intensity–duration–frequency curves using wavelet analysis. *Water Resources Management*, 1–23. **(IF 3.9)**

[36] Ejaz, N.**, Khan, A.H., Shahid, M., Zaman, K., Balkhair, K.S., Alghamdi, K.M., **Rahman, K.U.*** and Shang, S. (2024). Superiority of dynamic weights against fixed weights in merging multi-satellite precipitation datasets over Pakistan. *Water*, 16(4), 597. **(IF 3.0)**

2023

[35] **Rahman, K.U.**, Hussain, A., Ejaz, N.**, Shang, S., Balkhair, K.S., Khan, K.U.J., Khan, M.A. and Rehman, N.U. (2023). Analysis of production and economic losses of cash crops under variable drought: a case study from Punjab province of Pakistan. *International Journal of Disaster Risk Reduction*, 85, 103507. **(IF 5.0)**

[34] **Rahman, K.U.**, Shang, S., Balkhair, K. and Nusrat, A. (2023). Catchment-scale drought propagation assessment in the Indus Basin of Pakistan using a combined approach of principal components and wavelet analyses. *Journal of Hydrometeorology*, 24(4), 601–624. **(IF 3.8)**

[33] Qian, X., Qi, H., Shang, S., Wan, H., **Rahman, K.U.** and Wang, R. (2023). Deep learning-based near-real-time monitoring of autumn irrigation extent at sub-pixel scale in a large irrigation district. *Agricultural Water Management*, 284, 108335. **(IF 6.7)**

[32] Ejaz, N.**, Bahrawi, J., Alghamdi, K.M., **Rahman, K.U.** and Shang, S. (2023). Drought monitoring using Landsat-derived indices and Google Earth Engine platform: a case study from Al-Lith watershed, Kingdom of Saudi Arabia. *Remote Sensing*, 15(4), 984. **(IF 5.0)**

[31] Ashraf, M.S.**, Shahid, M., Waseem, M., Azam, M. and **Rahman, K.U.*** (2023). Assessment of variability in hydrological droughts using the improved innovative trend analysis method. *Sustainability*, 15(11), 9065. **(IF 3.9)**

[30] Zahran, H.**, Ali, M.Z., Jadoon, K.Z., Yousafzai, H.U.K., **Rahman, K.U.*** and Sheikh, N.A. (2023). Impact of urbanization on groundwater and surface temperature changes: a case study of Lahore City. *Sustainability*, 15(8), 6864. **(IF 3.9)**

[29] Ejaz, N.**, Elhag, M., Bahrawi, J., Zhang, L., Gabriel, H.F. and **Rahman, K.U.*** (2023). Soil erosion modelling and accumulation using RUSLE and remote sensing techniques: case study Wadi Baysh, Kingdom of Saudi Arabia. *Sustainability*, 15(4), 3218. **(IF 3.9)**

[28] Hussain, A., Jadoon, K.Z., **Rahman, K.U.**, Shang, S., Shahid, M., Ejaz, N. and Khan, H. (2023). Analyzing the impact of drought on agriculture: evidence from Pakistan using standardized precipitation evapotranspiration index. *Natural Hazards*, 115(1), 389–408. **(IF 3.7)**

2022

[27] **Rahman, K.U.**, Pham, Q.B., Jadoon, K.Z., Shahid, M., Kushwaha, D.P., Duan, Z., Mohammadi, B., Khedher, K.M. and Anh, D.T. (2022). Comparison of machine learning and process-based SWAT model in simulating streamflow in the Upper Indus Basin. *Applied Water Science*, 12(8), 178. **(IF 5.5)**

[26] **Rahman, K.U.**, Hussain, A., Ejaz, N., Shahid, M., Duan, Z., Mohammadi, B., Hoai, P.N., Pham, Q.B., Khedher, K.M. and Anh, D.T. (2022). Evaluating the impact of the environment on depleting groundwater resources: a case study from a semi-arid and arid climatic region. *Hydrological Sciences Journal*, 67(5), 791–805. **(IF 3.5)**

[25] Mohammadi, B., Moazenzadeh, R., Pham, Q.B., Al-Ansari, N., **Rahman, K.U.**, Anh, D.T. and Duan, Z. (2022). Application of ERA-Interim, empirical models, and an artificial intelligence-based model for estimating daily solar radiation. *Ain Shams Engineering Journal*, 13(1), 101498. **(IF 6.0)**

[24] Hussain, A., **Rahman, K.U.**, Shahid, M., Haider, S., Pham, Q.B., Linh, N.T.T. and Sammen, S.S. (2022). Investigating feasible sites for multi-purpose small dams in Swat District of Khyber Pakhtunkhwa, Pakistan: socioeconomic and environmental considerations. *Environment, Development and Sustainability*, 1–24. **(IF 4.9)**

[23] Polong, F., Pham, Q.B., Anh, D.T., **Rahman, K.U.**, Shahid, M. and Alharbi, R.S. (2022). Evaluation and comparison of four satellite-based precipitation products over the upper Tana River Basin. *International Journal of Environmental Science and Technology*, 20(1), 843–858. **(IF 3.1)**

2021

[22] **Rahman, K.U.**, Shang, S. and Zohaib, M. (2021). Assessment of merged satellite precipitation datasets in monitoring meteorological drought over Pakistan. *Remote Sensing*, 13(9), 1662. **(IF 5.0)**

[21] Li, J., Shang, S., Jiang, H., Song, J., **Rahman, K.U.** and Adeloye, A.J. (2021). Simulation-based optimization for spatiotemporal allocation of irrigation water in arid region. *Agricultural Water Management*, 254, 106952. **(IF 6.7)**

[20] Elkhrachy, I., Pham, Q.B., Costache, R., Mohajane, M., **Rahman, K.U.**, Shahabi, H., Linh, N.T.T. and Anh, D.T. (2021). Sentinel-1 remote sensing data and Hydrologic Engineering Centre River Analysis System two-dimensional integration for flash flood detection and modelling in New Cairo City, Egypt. *Journal of Flood Risk Management*, 14(2), e12692. **(IF 4.1)**

[19] Balkhair, K.S. and **Rahman, K.U.** (2021). Development and assessment of rainwater harvesting suitability map using analytical hierarchy process, GIS and RS techniques. *Geocarto International*, 36(4), 421–448. **(IF 3.8)**

[18] Wan, H., Li, J., Shang, S. and **Rahman, K.U.** (2021). Exploratory factor analysis-based co-kriging method for spatial interpolation of multi-layered soil particle-size fractions and texture. *Journal of Soils and Sediments*, 21, 3868–3887. **(IF 3.6)**

[17] Shahid, M., **Rahman, K.U.**, Haider, S., Gabriel, H.F., Khan, A.J., Pham, Q.B., Mohammadi, B., Linh, N.T.T. and Anh, D.T. (2021). Assessing the potential and hydrological usefulness of the CHIRPS precipitation dataset over a complex topography in Pakistan. *Hydrological Sciences Journal*, 66(11), 1664–1684. **(IF 3.5)**

[16] Shahid, M., **Rahman, K.U.**, Haider, S., Gabriel, H.F., Khan, A.J., Pham, Q.B., Pande, C.B., Linh, N.T.T. and Anh, D.T. (2021). Quantitative assessment of regional land use and climate change impact on runoff across Gilgit watershed. *Environmental Earth Sciences*, 80, 1–18. **(IF 2.8)**

[15] Linh, N.T.T., Ruigar, H., Golian, S., Bawoke, G.T., Gupta, V., **Rahman, K.U.**, Sankaran, A. and Pham, Q.B. (2021). Flood prediction based on climatic signals using wavelet neural network. *Acta Geophysica*, 69(4), 1413–1426. **(IF 2.3)**

[14] Shahid, M. and **Rahman, K.U.** (2021). Identifying the annual and seasonal trends of hydrological and climatic variables in the Indus Basin, Pakistan. *Asia-Pacific Journal of Atmospheric Sciences*, 57, 191–205. **(IF 2.3)**

2020

[13] **Rahman, K.U.**, Shang, S., Shahid, M. and Wen, Y. (2020). Hydrological evaluation of merged satellite precipitation datasets for streamflow simulation using SWAT: a case study of Potohar Plateau, Pakistan. *Journal of Hydrology*, 587, 125040. **(IF 6.4)**

[12] **Rahman, K.U.**, Shang, S., Shahid, M., Wen, Y. and Khan, A.J. (2020). Development of a novel weighted average least squares-based ensemble multi-satellite precipitation dataset and its comprehensive evaluation over Pakistan. *Atmospheric Research*, 246, 105133. **(IF 5.5)**

[11] **Rahman, K.U.** and Shang, S. (2020). A regional blended precipitation dataset over Pakistan based on regional selection of blending satellite precipitation datasets and the dynamic weighted average least squares algorithm. *Remote Sensing*, 12(24), 4009. **(IF 5.0)**

[10] **Rahman, K.U.**, Shang, S., Shahid, M., Wen, Y. and Khan, Z. (2020). Application of a dynamic clustered Bayesian model averaging (DCBA) algorithm for merging multisatellite precipitation products over Pakistan. *Journal of Hydrometeorology*, 21(1), 17–37. **(IF 3.8)**

[9] Wen, Y., Shang, S., **Rahman, K.U.**, Xia, Y. and Ren, D. (2020). A semi-distributed drainage model for monthly drainage water and salinity simulation in a large irrigation district in arid region. *Agricultural Water Management*, 230, 105962. **(IF 6.7)**

[8] Guan, Y., Mohammadi, B., Pham, Q.B., Adarsh, S., Balkhair, K.S., **Rahman, K.U.**, Linh, N.T.T. and Tri, D.Q. (2020). A novel approach for predicting daily pan evaporation in the coastal regions of Iran using support vector regression coupled with krill herd algorithm model. *Theoretical and Applied Climatology*, 142, 349–367. **(IF 3.4)**

[7] Shahid, M., **Rahman, K.U.**, Balkhair, K.S. and Nabi, A. (2020). Impact assessment of land use and climate changes on the variation of runoff in Margalla Hills watersheds, Pakistan. *Arabian Journal of Geosciences*, 13, 1–14. **(IF 1.8)**

2019

[6] **Rahman, K.U.**, Shang, S., Shahid, M. and Wen, Y. (2019). An appraisal of dynamic Bayesian model averaging-based merged multi-satellite precipitation datasets over complex topography and the diverse climate of Pakistan. *Remote Sensing*, 12(1), 10. **(IF 5.0)**

[5] **Rahman, K.U.**, Shang, S., Shahid, M. and Wen, Y. (2019). Performance assessment of SM2RAIN-CCI and SM2RAIN-ASCAT precipitation products over Pakistan. *Remote Sensing*, 11(17), 2040. **(IF 5.0)**

[4] Wen, Y., Shang, S. and **Rahman, K.U.** (2019). Pre-constrained machine learning method for multi-year mapping of three major crops in a large irrigation district. *Remote Sensing*, 11(3), 242. **(IF 5.0)**

2018

[3] **Rahman, K.U.**, Shang, S., Shahid, M. and Li, J. (2018). Developing an ensemble precipitation algorithm from satellite products and its topographical and seasonal evaluations over Pakistan. *Remote Sensing*, 10(11), 1835. **(IF 5.0)**

2017

[2] Balkhair, K.S. and **Rahman, K.U.** (2017). Sustainable and economical small-scale and low-head hydropower generation: a promising alternative potential solution for energy generation at local and regional scale. *Applied Energy*, 188, 378–391. **(IF 11.2)**

[1] **Rahman, K.U.***, Balkhair, K.S., Almazroui, M. and Masood, A. (2017). Sub-catchments flow losses computation using Muskingum–Cunge routing method and HEC-HMS GIS based techniques, case study of Wadi Al-Lith, Saudi Arabia. *Modeling Earth Systems and Environment*, 3, 1–9. **(IF 3.0)**

B. Book Chapter

- **Rahman, K.U.*** and Shang, S. (2022). Performance assessment of merged multisatellite precipitation datasets over diverse climate and complex topography. In *Precipitation Science* (pp. 391–420). Elsevier.

C. Conference Presentations

- **Rahman, K.U.** "GRACEful insights: from space to in-situ monitoring of groundwater." International Conference on Sustainable Water and Environment, Xi'an, China, 14–17 June 2024. Oral presentation.
- **Rahman, K.U.** "Calibration, validation and application of a smart groundwater monitoring system integrated with GRACE to monitor real-time groundwater depletion and model managed aquifer recharge." 2023 China Water Academic Congress, Zhengzhou, China, 3–7 November 2023. Oral presentation.
- **Rahman, K.U.**, Shang, S. and Jadoon, K.Z. "Monitoring the real-time depletion of groundwater using GRACE satellite and smart IoT-based groundwater monitoring system." XIV IAEG Congress, Chengdu, China, 21–27 September 2023. Oral presentation.
- **Rahman, K.U.** "Sub-catchments flow losses computation using Muskingum–Cunge routing method and HEC-HMS GIS based techniques, case study of Wadi Al-Lith, Saudi Arabia." Eighth Scientific Forum, King Abdulaziz University, Jeddah, Saudi Arabia. Oral presentation.

TEACHING EXPERIENCE

Course designer and instructor, Shandong University 2024 – Present

"Remote Sensing for Water Resources" (postgraduate): satellite and reanalysis datasets, Google Earth Engine, Python for remote sensing, and remote-sensing models for water applications.

Teaching Assistant, Tsinghua University 2017 – 2018

Theory and Application of Fluid Dynamics in Porous Media (graduate); River Engineering (graduate). Delivered selected lectures, prepared examinations and graded assignments.

Teaching Assistant, King Abdulaziz University 2015 – 2017

Advanced Groundwater Hydrology, Groundwater Modeling, Special Topics in Hydrology (all graduate). Delivered selected lectures, prepared examinations and graded assignments.

GRADUATE STUDENT SUPERVISION

Supervised or co-supervised **22 graduate researchers (3 PhD, 19 MS)** at four universities; 16 have graduated. Supervised students are lead authors of 9 SCI journal articles.

Shandong University, China — Current students

- **Jia Yifan** (PhD, 2026-). "*Linking Cryosphere-Driven Climate Change to Groundwater Storage and Land Deformation in the Tarim River Basin*" **.** In progress
- **Bilal Ahmad** (PhD, 2026-). "*Understanding the Physical Mechanisms and Projections of Glacial Lake Outburst Floods in the Third Pole Region*"**.** In progress
- **Shahanshah Abbas** (PhD, 2024–). *"Understanding Catchment Memory under Climate-Induced Extreme events in Third Pole Region."* In progress
- **Aniqa Murtaza** (PhD, 2024–). *"Role of changing climate and land-use characteristics in the propagation of extreme events across the Third Pole."* In progress

- **Xiaoyu Liu** (MS, 2025–). *"Assessing the impact of climate change and land-use variability on extreme events by decomposition of GRACE signals."* In progress
- **Minghao Liu** (MS, 2025–). *"GRACE applications in monitoring snow-induced water availability and its contribution to soil salinity across the Tarim River Basin."* In progress

National University of Sciences and Technology (NUST), Pakistan

- **Rashid Ahmad** (MS). *"Rainwater harvesting impact on groundwater recharge: Nullah Lai catchment as a case study."* Graduated
- **Syed Adnan Shah** (MS). *"Development of IDF curves under the influence of changing climate in Islamabad and Abbottabad cities."* Graduated
- **Muhammad Nouman** (MS). *"Identifying potential sites for rainwater harvesting and simulating water balance: a case study from Potohar Plateau."* Graduated
- **Shoaib Salim** (MS). *"Impact of land use and climate changes on streamflow in the Haro River basin."* Graduated
- **Saad Ahmad** (MS). *"Identifying potential sites for groundwater recharge using integrated remote sensing and GIS techniques in Potohar Plateau, Pakistan."* Graduated
- **Usama Nazar** (MS). *"Development of a remote sensing-based regional dataset for streamflow and flood simulation."* Graduated
- **Sarmad Manzoor** (MS). *"Rainfall–runoff inundation simulation of the 2010 Pakistan flood in the River Swat basin."* Graduated
- **Rashid Ahmad** (MS). *"Impact of land use land cover (LULC) changes on groundwater recharge."* Graduated
- **Aimal Khan** (MS). *"Identification of potential sites for construction of underground (subsurface) dams in Pakistan."* Graduated
- **Muhammad Usman Ejaz** (MS). *"Quantification of soil erosion and sediment load in the Soan River catchment using remote sensing applications."* Graduated
- **Muhammad Mansoor** (MS). *"Assessing the impact of flood on the spatio-temporal fluctuations of groundwater using improved GRACE data in arid and hyper-arid regions of the Indus Basin."* In progress

University of Engineering and Technology (UET) Lahore, Pakistan

- **Zulkaif Basir** (MS). *"Water security and climate change: application of RCMs to quantify the role of climate change on water security in the Khanpur Dam catchment."* Graduated
- **Muhammad Asim** (MS). *"Identifying the potential for small dams in Gilgit-Baltistan, Pakistan using a GIS-MCDA approach."* Graduated
- **Muhammad Ashir Hamza** (MS). *"Assessing the impact of extreme natural hazards and land-use changes on the depleting groundwater resources of Lahore."* Graduated
- **Muhammad Saad Raza** (MS). *"Integrating remote sensing data with SWAT to understand variations in the hydrological cycle across the Swat River basin."* Graduated
- **Muhammad Abdullah** (MS). *"Analyzing groundwater movement in transboundary river catchments using coupled GRACE and in-situ data."* Graduated

King Abdulaziz University, Saudi Arabia

- **Nuaman Ejaz** (MS). *"Characterization of meteorological drought over Saudi Arabia using GIS and remote sensing techniques: case study Al-Lith and Khafji."* Graduated

EDITORIAL SERVICE

- Editorial Board Member: Ecological Indicators
- Topic Editor: Remote Sensing, Water, Earth, Agronomy and Hydrology (MDPI joint topic): "Remote Sensing Research and Application of Agricultural Drought and Water Management"
- Guest Editor: Atmosphere (ISSN 2073-4433), special issue "Advances on Remote Sensing of Precipitation"
- Guest Editor: Sustainability (ISSN 2071-1050), special issue "Hydro-meteorology and Its Application in Hydrological Modeling"

PEER REVIEW

Reviewer for 12 international journals, including *Journal of Hydrology, Atmospheric Research, Climate Dynamics, Hydrological Sciences Journal, International Journal of Disaster Risk Reduction, Geocarto International, Remote Sensing, Water, Atmosphere, Sustainability, Applied Geomatics, Heliyon*.

PROFESSIONAL MEMBERSHIPS

- International Glaciological Society (IGS)
- International Association for Engineering Geology and the Environment (IAEG)
- Environmental and Engineering Geophysical Society (EEGS)
- Young Hydrologist Society (YHS)
- Pakistan Engineering Council (PEC)

TECHNICAL SKILLS AND SOFTWARE

Hydrological and groundwater modeling: SWAT, HEC-HMS, Watershed Modeling System (WMS), MODFLOW, GMS, ModelMuse

Climate modeling: WRF, RegCM5, CMIP6 GCM outputs, machine learning

Remote sensing and GIS: Google Earth Engine, GRACE/GRACE-FO, GIS, ENVI, ERDAS, Global Mapper, Surfer

Programming and data science: Python, R, machine learning

Statistics and visualization: Origin, Grapher, EViews 10, Stata 16, GAUSS 20

PROFESSIONAL TRAINING

- UNESCO International Training Workshop, "Capacity Building of Community Elders and Media towards Flood Vigilance and Disaster Reporting," NUST Institute of Civil Engineering, Islamabad, 25–26 September 2014.

REFERENCES

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